STATEMENT OF LAWRENCE J. KUPFER
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VIRGIN ISLANDS WATER AND POWER AUTHORITY
TO THE COMMITTEE OF THE WHOLE
33rd LEGISLATURE OF THE U.S. VIRGIN ISLANDS
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INTRODUCTION

Good day Honorable Senate President, Novelle Francis, honorable members of the Committee of the Whole of the 33rd Legislature, other testifiers present today, and the listening and viewing audience. My name is Lawrence J. Kupfer, and I am the Executive Director/Chief Executive Officer of the Virgin Islands Water and Power Authority ("VIWAPA" or the "Authority"). I have with me today to also present testimony, the Authority's Board Chair, Commissioner of Property and Procurement, Mr. Anthony Thomas. Assisting in the today's presentation are members of the Authority's Executive Staff.

The Authority is before you in response to your subpoena requiring that we provide certain documents and that we appear here today. Please allow me to apologize for the Authority's delay in providing the information requested. As you know two subpoenas were issued for documents, a number of which were very voluminous. It took the Authority sometime to gather, scan and compile the necessary information. We anticipate we have satisfied your document request, but to the extent we have not, we will immediately remedy any deficiencies.

We are pleased to be here today to provide information to this Honorable Body and the community at large about operations at the VIWAPA. However, I would be remiss

if I did not say that we are disappointed that the Legislature found it necessary to issue subpoenas to compel the Authority's appearance as we have ***always*** cooperated each and every time that we are asked to appear and present testimony. The disappointment aside, being compelled to appear before this body gives the unsettling impression to our federal partners, and current and potential investors and lenders that there is something amiss at the Authority. After published reports appeared in the local news on Wednesday, August 14th stating that the Authority's Board and Management were being subpoenaed to appear before the Legislature, a potential investor pulled their offer for a transaction that was scheduled to close on August 21st. That transaction would have provided approximately $4 million in benefits to the Authority and its customers.

Notwithstanding that our appearance here today has been required, as we previously indicated, we consider this another opportunity to enlighten the Honorable Members of this Body, as well as the public, about matters affecting the operations of the Authority. While the Authority always hopes that the information it presents shows the progress we have made, and continue to make, in our efforts to bring reliable and affordable power to the businesses and residents of the Territory, we admittedly are not perfect. We endeavor however to learn from our mistakes, redouble our efforts and re-dedicate ourselves to doing better. That being the case, we would like to address issues of concern with the Authority and its operation that have been highlighted by the public or the media of late. Our aim is to be as forthright and transparent as we can, with matters affecting our operations and the decisions that we have made.

SECTION 1. TROPICAL STORM KAREN/HURRICANE DORIAN UPDATE

Allow me to start this testimony by updating the public on the most recent events that have transpired in the aftermath of Tropical Storm Karen and Hurricane Dorian. In preparation for both storms, VIWAPA activated its Incident Command System Management Team five days ahead of the storm's potential landfall. During these periods, there were extensive planning meetings internally, and with U.S. Department of Energy ("DOE"), American Public Power Association ("APPA"), outside contractors, as well as other government agencies. This ensured proper coordination was in place, and resources were readily available territory-wide for swift damage assessments and any required restoration effort.

As it pertains directly to the storms, starting with the most recent first, Tropical Storm Karen, we are happy to report that WAPA was able to re-energize 99% of our customer's territory-wide within a 24-hour period. Line crews then addressed the remainder of the pocket outages by the end of the next work day. Resolution of the isolated outages extended beyond the initial 24-hour period due to the complexity of work required. This work simply could not have been achieved the night before due to lingering inclement weather conditions.

Damages sustained throughout the T& D systems after Tropical Storm Karen were similar to that experienced a few weeks ago in Hurricane Dorian. The damages included, but were not limited to, burned switches, blown line fuses, damaged transformers, broken

and downed poles, downed primary and secondary lines, as well as damaged weather head connections.

As it pertains to Hurricane Dorian, as you know, initial weather forecasts projected a tropical storm that was to pass south of the U.S. Virgin Islands. However, as the storm neared our region, it took a northward turn and entered the Virgin Islands first, as a tropical storm, and then developed into a Category One hurricane. The magnitude of the damages in the St. Thomas-St. John district were significantly greater in Hurricane Dorian when compared to St. Croix District.

By 7:15 p.m. August 28th, the day of the storm, all feeders on St. Croix were energized, and over 90% of customers were restored. By midday of the following day, service to all other St. Croix customers was restored. The assessment and restoration efforts in the St. Thomas-St. John district were made more complex and challenging by the extensive storm damage incurred on the western and northern end of St. Thomas.

Efforts to restore power on St. Thomas were hampered by the loss of generation on two occasions, and constant rainfall and lightning for several hours. 80% of customers in St. John were energized by 7:45 p.m. Wednesday, with full power to the island being restored shortly after midday on Thursday. On St. Thomas, 67% of customers were energized by early Thursday morning, August 29th. In total, it took approximately 80 hours or until late Saturday, August 31st, to achieve 100% restoration on St. Thomas and St. John. Despite the storm challenges, WAPA restored electrical service to our customers

in the territory safely, and without incident or injury. WAPA contractors Haugland Energy and BBC Electric were activated to assist in the Dorian restoration effort. Territory-wide, power generation plants, LPG terminals, and water production and distribution facilities fared well during both storm events with no damages reported.

One incident that occurred during the storm of which we have heard many comments involves a single composite pole that fell on St. John during the storm event. WAPA has gone on record previously indicating that composite poles are rated for 200 miles per hour wind and, as we know, Hurricane Dorian's winds were nowhere near that windspeed when it hit the Virgin Islands. Some members of the public have questioned why the composite pole would fall when the windspeed was not at the highest rating for the pole and have further questioned whether the new composite poles which the Authority is in the process of installing, would indeed fare any better than wooden poles during storm events. For the record, the pole in question did not fall due to windspeed. Upon investigating the matter, it was determined that a large tree fell on the power lines that were attached to the pole, which overstressed the pole and caused it to break. The fact is, no pole is indestructible, and all types of poles will fail if over-stressed. However, composite poles are, and continue to be, a superior alternative to wood and other pole materials. A comparison shows that:

- Composite poles, according to test results, withstand the complex stress of hurricane force winds better than wooden, steel or concrete poles.

- The addition of heavy duty, multiple guide cables and pole supports significantly increases their resiliency.

- A wooden pole begins to weaken immediately as it dries out and the buried portion is subject to rot. A wooden pole has only a maximum 20-year life span. Wood pole suppliers do not provide a warranty.

- Composite poles do not weaken over time and have an 80-year life span. Our composite pole supplier offers a 40-year warranty.

- The Authority has embarked on the use of LiDAR (Light Detection and Ranging) data analysis that will help to identify vulnerable poles and targeted tree trimming to improve resiliency. LiDAR data has become the standard for North American utilities leveraging technology for vegetation management planning. These utilities invest in acquiring this data every year to determine where forestry trimming and removal maintenance dollars should be spent.

To close out my comments on Tropical Storm Karen and Hurricane Dorian, I want to take a moment to again say "Thank You" to the men and women of the Virgin Islands Water and Power Authority for their continued dedication and hard work during the storm. I also want to thank our customers for their patience, support and understanding during our recovery process.

SECTION 2. OUTAGES

There has been much talk, criticism, and concerns expressed by the public about the number of recent outages at the power plants on St. Thomas and St. Croix. Our customers have a right to be concerned about the reliability of the services they are being provided. I would like to take this opportunity to let you and the public know what VIWAPA is doing about this matter.

As a result of an increase in the frequency of power outages within the St Thomas/St John District, on September 9th, VIWAPA requested, through the American Public Power Association's partnership with the New York Power Authority (NYPA), technical assistance to assist in determining the root cause of recurring system-wide and partial-system outages within both districts. On September 11th, a team of utility experts from NYPA was dispatched to the Territory. The team immediately commenced an evaluation of the electrical system, including equipment related to both generation and transmission and distribution systems. The team also prepared monitoring equipment to capture event information in order to expedite the determination of the root cause of the outages that had been plaguing both St Thomas and St. Croix plants.

The team's immediate focus was St. Thomas with priority placed on the following areas:

- Determine root causes of island wide outages;
- Development of a system model in order to perform dynamic system stability analysis;
- Development of Short-Term Action Plans to immediately mitigate the outages;
- Development of Long-Term Recommendations to prevent recurrence of identified root causes; and
- Set existing equipment to capture event information to more readily determine the root cause(s) of similar future events.

SUMMARY:

It was determined that the fuel system for leased Units 26 & 27 generators did not respond well to system instability events. To address this matter, WAPA, NYPA, Wartsila and APR (owner/operator of the three leased generator) (the "team") developed short- and long-term recommendations to improve the fuel system and continue to evaluate ways to improve current load shedding schemes in order to ensure system stability during similar future events. The specific areas focused on by the team were:

- Fuel system to leased Units 26 & 27
- Under Frequency Load Shedding
- Digital fault recording capabilities
- Steady state system model
- Dynamic system model

The fuel system for the leased generators utilize Liquid Fuel Oil (LFO) to generate power. The amount of LFO supplied to the turbine controls the amount of power generated. This process requires precise control. To ensure that fuel flow can be precisely controlled, it must be supplied within a narrow pressure range. Operation outside of the allowable range causes the generator to trip in order to protect it against damage.

During normal operation the generator changes load gradually, which means that LFO flow also changes slowly, allowing the system to maintain the proper pressure to the

generator. During transient conditions however, the load changes very fast due to trips of feeders or other generators, using information gathered from field walk downs, and the data furnished by APR regarding the history of problems with the LFO supply system, it was confirmed that the Units 26 & 27 were not responding adequately to sudden and significant changes in load.

As a result of these and other technical investigations, the team developed short, intermediate, and long-term recommendations, which are summarized as follows:

SHORT TERM:

- Improve fuel supply to leased Units 26 & 27
    - Raise regulator discharge pressure for two of the leased generators (**Completed**)
    - Remove the in-line regulators and reinstate the variable frequency drive control for the regulation of fuel pressure to these generators **(By October 31, 2019)**
- Enable Digital fault recording capabilities on Harley 13.8kV & 34.5 kV. (**Completed**)
- Enable Digital fault recording capabilities on Wartsila units. (**Completed**)
- Enable Digital Fault Recording capabilities on St. Croix. (**Partially Completed**)
- Review existing load shedding schemes. (**Ongoing**)

INTERMEDIATE TERM: (1 – 2 months)

- Enable Digital Fault recording on all St. Thomas capable devices (**Ongoing**)
- Complete Dynamic system model (short circuit & equipment models) (**Ongoing**)

LONG TERM (2-12 months)

- Develop improvements for future load shedding

- Develop procedures/processes to improve generation and overall system operations planning
- Implement Exciter Power System Stabilizer (EPSS) on leased generators
- Validate system model against future system disturbances
- Adjust generator settings and under frequency load shedding based on validated system model
- Review long term service agreements for equipment to ensure future system reliability

The Authority is confident that the root cause or causes of these outages are in the process of being identified and that the appropriate steps are being carried out in the most expeditious manner to improve the reliability and stability of the WAPA electrical systems. It is important to note that there are inherent challenges in implementing solutions on a system that is in continuous operation in order to meet daily electrical needs. We must again remind everyone that WAPA's power generating facilities are not interconnected to a grid with other power producers. WAPA operates two independents, stand-alone power plants on two islands. This is significant as power systems in the U.S. and other jurisdictions are interconnected with multiple power plants, which inherently adds to system reliability and stability. It will take time to implement long term solutions. We appreciate the patience of the people of the Territory as we work to resolve these recurring outages.

Beyond the "long term" (12-month plan), more permanent system reliability will be realized through a HUD grant which will add four new and efficient generator units and battery storage at the Harley facility. The monies have already been allocated and this

project is currently out to bid. These generators and batteries should be online by the end of 2020. These generators will help to further improve reliability and reduce rates.

SECTION 3. BUSINESS COMPROMISE EMAIL

As has been reported, VIWAPA was the victim of two Business Email Compromise (BEC) event. A BEC is a type of scam targeting companies who conduct wire transfers and have suppliers abroad. Typically, in these scams, the corporate or publicly available email accounts of executives, high-level employees involved in finance or employees involved with wire transfer payments are compromised through keyloggers or phishing attacks to perform fraudulent wire transfers. In 2018, according to FBI statistics, BEC attacks led to more than $1.3 Billion in reported losses for companies globally.

The events that transpired at VIWAPA occurred on May 18th and June14th of 2018 and involved two wire transfer payments to one of our larger vendors. The first incident was not immediately recognized. On the day that the second incident occurred VIWAPA immediately contacted its bank to recall the wire transfer. Further on the same day contact was made with both the U.S. Attorney's Office and the Office of the Attorney General. The AG's office immediately assigned an investigator to this matter and the U.S. Attorney's Office advised we should contact the FBI. Contact was made with the FBI on July 5, 2018, which is still investigating this matter.

While I am certain there is much interest in the details of exactly how the Authority's wire transfers were compromised, to reveal that information creates a roadmap for those that still continue to attempt to compromise our financial security. Since the incidents occurred in 2018, VIWAPA has had at least 5 unsuccessful attempts to infiltrate our wire payment processing systems. We are pleased to report those incidents were immediately recognized and did not make it further than the initial contact stage.

VIWAPA wishes to assure the members of this body and the Public that in aftermath of these losses, it undertook immediate and aggressive action to put additional and enhanced controls in place to protect itself against future compromised emails and cyber threats. Since the occurrence of these events, every employee at WAPA was required to attend in-person, instructor-led cyber security training, and were tested to ensure thorough understanding of the training information. The testing revealed a 98 percent comprehension rate among our employees. Approximately 4,000 random phishing tests were conducted in the aftermath of the training with only 4 users failing. Any user that failed this additional testing received refresher training. Thus far, our training scores are well above industry standards. Testing continues every day.

VIWAPA has also secured the services of a cyber security expert, specializing in utility operation, who has conducted a full cyber security assessment. The recommendations made from this assessment are being implemented. Additionally,

practices and procedures for implementing wire transfers have been revised for more effective internal controls.

SECTION 4. FINANCIAL CONDITION/RATES

The Authority's current financial situation is best described as "challenged" because, very simply, the Authority is currently not collecting enough revenues to sustain its operations. As a backdrop to these comments, allow me to explain how utilities obtain their revenues. Electric Utilities earn revenues when the body that regulates the utility determines the utility's total revenue requirement in what is known as a rate case. The revenue requirement represents the amount of money the utility must collect in order to cover its costs (i.e., fuel, personnel, materials and supplies, maintenance, debt service, etc.) and make a reasonable profit in the case of a private utility. In the case of a public utility, such as WAPA, the revenue requirement also must generate enough revenue to:

- Provide funding for new investment to modernize aging and outdated infrastructure, and
- Provide the needed flexibility to utilize the most economical fuel source,
- Come into compliance with government policy support of new energy choices and regulations, and
- Build up reserves to allow the utility to be more reliable and resilient in a rapidly changing environment.

For many years the Public Services Commission ("PSC") which sets the rates for the Authority has not provided the Authority with rates that generate enough revenue to meet the Authority's revenue requirements. Additionally, governmental customers have

historically not paid their WAPA bills in a timely manner, thereby causing WAPA's outstanding government receivables to grow as much as $30 million. Coupled with private sector outstanding receivables and the deferred fuel balance that the Authority has not been able to collect because it does not have the rates to do so, the Authority has been unable to realize more than $40-$50 million annually.

Because the Authority has been unable to collect enough revenue to fund its mandatory costs, the Authority's liquidity is impacted. Hence we have been unable to pay vendors in a timely manner; maxed out lines of credit at a much higher interest rate than the late fees that the Authority assesses on outstanding balances, been unable to build up the necessary operating reserves, cannot pay competitive wages to our employees, do not have the necessary resources to meet the minimum debt service requirements associated with financing new more efficient generation and cannot maintain the existing generating systems and payments to our fuel suppliers. Presently, the Authority has approximately $550 million in debt as follows:

- WAPA Bonded Debt $252M
- Community Disaster Loan $95.5M
- Credit Lines $38M
- Vitol Capital Lease $160M

As a result, day to day liquidity remains extremely challenging. As reported in my June 5, 2019 testimony, many critical vendors may not continue to provide services to the

Authority if the amounts owed are not addressed. Should this occur, the Authority will not be able to continue to provide certain necessary services.

We would like to take a moment to thank this Honorable Body for its efforts in assisting the Authority most recently by ensuring that we received a $22.9M appropriation from the recent Medicare reimbursement to reduce the outstanding receivables owed by the Hospitals and the Waste Management Authority. This payment came at time when we were facing extreme pressure from Vitol to make a payment towards the balance owed by the Authority for outstanding propane, Infrastructure and Operations and Maintenance Fees. Vitol was prepared to stop providing LPG for our generating units. A loss of propane supply would have led to an increase to rate payers of 7 cents/KWhr, essentially increasing annual costs by $35 million. The entire amount that the Authority received from the Medicare reimbursement was paid to Vitol to reduce the outstanding balance. Additionally, we would like to thank the Administration for addressing the past due amounts of all other Government of the Virgin Islands entities. The above balances represent only a small portion of our overall indebtedness which continue to make it difficult for the Authority to maintain its operations. That is why the Authority filed emergency surcharges and its base rate petition with the PSC within the past several months.

We are aware that rates are a hotly contested issue that has been the subject of much discussion in the Territory. As previously indicated, the rates paid by the Authority's

customers for electric services are set by the PSC. The rates for the Authority include the Base Rate, which covers payment of debt service, personnel costs, operating costs, insurance and some capital projects, and the LEAC rate which is a direct pass through for the cost of fuel to operate the generating units. On May 20, 2019, the Authority filed a base rate case with the Public Services Commission. In its most recent revised filing, VIWAPA has requested $30.5 million in additional base rate revenues. The basis for the filing for the adjustment in the rates was directly related to the recent hurricanes experienced in the Territory. Since the last PSC electric rate investigation concluded in July 2017, the Authority sustained a substantial reduction in its customer base, which translated to a decline in its overall sales, and has greatly affected its ability to pay its fixed costs and debts. Based on current available data, electric system sales have reduced from approximately 619,000 MWh in FY 2017 to 523,000 MWh in FY2019. Most of this decline in energy sales can be attributed to Hurricanes Irma and Maria, which resulted in a sixteen percent (16%) decline in sales.

Note that before filing for rates, every effort was made by the Authority to reduce its spending. After the hurricanes, significant steps were taken to address the critical juncture in which the Authority found itself. An austerity budget for FY2019 was implemented that was approximately $15.5 million lower when compared to the adopted budget.

Among the other substantive steps taken by the Authority to decrease its operating costs has been the reduction of total staffing positions by approximately 17.5%,

represented by a total of 104 positions from FY2014 to FY2019. The financial impact of this reduction is a reduction of total personnel costs by 18.3% or approximately $7.4 million per year. This reduction in personnel costs was generally achieved through attrition, as originally proposed by the Authority in its response to the Management Audit findings.

Per its amended LEAC and Base Rate petitions presently before the PSC, VIWAPA is requesting a decrease in its fuel charge or LEAC of approximately 2.5 cents/KWHr and an increase its Base Rates of approximately 2.5 cents/KWHr, the net result of which would not increase customer bills. What this means for VIWAPA and our rate payers, is that we would be able to close our deficits and proceed with planned financings. The decrease in the fuel charge has been made possible by WAPA's recent commissioning of very fuel efficient, propane fired generation in May of this year. Today, over 50% of our output generation, is being generated by these new more modern, propane fired generators. This was a commitment made to the Territory in 2016 and it is now in place. These upgrades, which will be discussed later in my testimony, will continue, with federal grant support, until 100% of our generating fleet is upgraded.

SECTION 5 - GRID DEFECTION

We have been asked by many whether the increase in rates could lead to grid defection, which will result in less customers of the Authority and higher rates for those that have no choice but to remain on the grid. A 2015 report by the Rocky Mountain

Institute (RMI) concluded that even in the U.S with low electricity prices, "the relative contributions of the grid and customers' solar and solar-plus-battery systems evolve over time. Initially the grid supplies most of a customer's electricity needs. Over time, as retail electricity prices from the grid increase and solar and battery costs decrease, customers logically reduce their grid purchases until the grid takes a backup-only role."

The Rocky Mountain Institute's study did not address, as the study acknowledges, the important related issues of "grid-facing costs such as T&D maintenance and central generation, as well as costs for grid-dependent customers who can't or don't invest in solar-plus-battery systems." For our service territory, with a large percentage of low- and moderate- and fixed-income residents, these are important issues that do need to be addressed.

There is no reason to believe that the USVI will not face a similar future as predicted by RMI. As distributed energy resources fall in cost, customers will increasingly want to integrate them into the electric system and programs designed to encourage the development of distributed energy resources may inadvertently shift the cost of maintaining the grid to a smaller subset of customers – raising concerns about fairness. These concerns will grow as penetration levels rise and will addressed.

Per RMI, "the electricity system is at a metaphorical fork in the road. Down one path are pricing structures, business models, and regulatory environments that favor non-exporting solar and solar-plus-battery systems. When economic and other conditions

reach the right tipping point, this trajectory favors true grid defection. In the meantime, an upward price spiral based on stranded assets serving a diminishing load will make solar-plus battery adoption increasingly attractive for customers who can, and lead to untenably high pricing for customers who remain on the grid, including low- and fixed-income customers who would bear a disproportionate burden of escalated retail electricity pricing. In this future, both grid and customer-side resources are overbuilt and underutilized, leaving excess capital on both sides of the meter."

"Down another path are pricing structures, business models, and regulatory environments in which distributed energy resources such as solar photovoltaic (PV) and batteries—and their inherent benefits and costs—are appropriately valued as part of an integrated grid. Solar PV and batteries can potentially lower systemwide costs while contributing to the foundation of a reliable, resilient, affordable, low-carbon grid of the future in which customers are empowered with choice. In this future, grid and customer-side resources work together as part of an integrated grid with far more efficient deployment of capital and physical assets."

"These two pathways are not set in stone, and there is some room to navigate within their boundaries. But decisions made today will set us on a trajectory from which it will be more difficult to course correct in the future. The time frame for making such decisions with long-lasting implications for the future grid is relatively short and is shorter and more urgent for some geographies than others."

With this as a backdrop, we do not need to fear distributed energy resources, but rather should work on regulations that incorporate ever changing technology for the benefit of all residents of the territory.

SECTION 6 - LPG PROJECT

We have been asked on countless occasions what happened to the 30 percent reduction in rates that was to have occurred when the Authority switch to LPG as one of its primary fuel sources. In that same vein, there has been much talk about perceived "cost overruns" for this project. To respond herein, it is necessary to place matters into perspective against the backdrop for this project. In 2014, rates for utility services were at an all-time high due to the global fuel oil crisis and HOVENSA, which was providing fuel to WAPA at a discounted rate, had ceased operation. At this time, VIWAPA's residential electrical rate was 52 cents per kWh. Also, at that time, fuel oil was approximately $140 per barrel, and was projected to escalate. Fuel cost represented 75% of the customer bill. Due to the rapidly escalating prices, VIWAPA was incurring a massive under-recovery in paying for the cost of fuel as the LEAC was not keeping pace with fuel costs. This resulted in the deferral of major maintenance needed for the plants.

VIWAPA sought to address this problem by pursing a range of projects. Without a doubt the largest and most environmentally favorable project VIWAPA undertook at that

time to bring relief to reduce the rates was the conversion of its generating units to burn LPG. On July 25, 2013 VIWAPA entered into a turnkey master agreement with Vitol Virgin Islands Corp, ("VITOL") for infrastructure construction, supply, and delivery of liquified propane gas (LPG) at WAPA's power plants on St. Thomas and St. Croix. Vitol was the supplier selected for this project after a rigorous competitive process.

The project achieved substantial completion on November 1, 2016 and January 1, 2017 for St. Croix and St. Thomas, respectively. The final cost for both facilities was $160 million. All upfront costs were paid by Vitol, with VIWAPA obligated to repay Vitol over a 10-year amortization period. The outstanding principal balance carries a very high 15 percent interest rate, which WAPA is actively pursuing refinancing.[1]

The objective of this fuel oil to propane transition was to enable VIWAPA to obtain needed flexibility in fuel for generation so that it could maintain reasonable pricing for its customers, given the inherent price volatility of the global oil market. Based on 2013 fuel prices approaching $140 per barrel, WAPA's total fuel bill was approximately $250 million annually. The Vitol-financed project was projected to result in a 30 percent reduction in fuel costs to customers, which equated then to about $79 million reduction in fuel cost annually. With the all-in Vitol cost (infrastructure plus operating/maintenance costs), the savings have equated to about $39 million annually. Based on current fuel prices, LPG

[1] The annual payment on a $160 million loan at a 15 percent interest rate over a 10-year period is about $27.7 million. The annual payment if the interest rate was 6 percent would be $20.5 million.

shows savings of approximately $77M in annual fuel cost. After Vitol's fees, savings equate to $38 million annually. This is a savings of 7 cents/KWHr.

VIWAPA has been challenged on many occasions about the project cost, and the fact that the project, which was to cost $87 million, ended up at $160 million, due to what has been characterized by many as cost overruns. Cost overruns suggest unanticipated or unplanned increases. The perception that the contract ran approximately $73 million overbudget is not entirely accurate, as the strategy that WAPA used to pursue this project and the resulting contract contemplated there could be adjustments in cost as the project moved forward.

When the LPG Project (the "Project") was first announced, VIWAPA implemented a very aggressive construction schedule to deliver the benefits of the propane conversion to the Territory as soon as possible. To accomplish this goal, the Project proceeded with Front End Engineering and Design (FEED) Study in parallel with procurement and vendor selection and contracting. This allowed Vitol to expedite the procurement of long-lead time items[2] and implement other time-saving measures to compensate for normal permitting and construction delays, including non-availability of construction materials and prolonged vendor negotiations.

[2] This is a common practice in certain construction projects where premiums are paid to equipment suppliers in exchange for an earlier delivery or in-service date. These premiums need to be weighed against the acceleration of fuel cost savings and reduced greenhouse gas emissions that WAPA customers now enjoy.

WAPA's strategy to have the FEED Study done in parallel with the procurement and vendor selection allowed Vitol to begin their work to get the Project completed as early as possible. The urgency was the result of the expected $39 million to be saved by our customers. Normally, the FEED Study and the final detailed engineering and design are finished sequentially, and thereafter contractors are engaged. In this case, because of WAPA's desire to substantially accelerate this Project so that we could immediately begin reducing fuel costs, we engaged the contractor and did the FEED Study, detailed design, and procurement, essentially simultaneously.

Both VITOL and the VIWAPA realized that the FEED Study, once completed would likely impact the contract price. Therefore, the Vitol contract provided for adjustments to the contract price, to be agreed upon between the parties, as necessitated by the results of the FEED Study. As such, modifications to the Project cost and schedule, were contemplated by the contract, resulting primarily from the unavoidable expansion of the project scope based on the results of the study. The expansion in scope relates to various aspects of permitting and construction that were unforeseen at the time the Project was launched.

The major reasons for contract costs adjustments included:

- Extended work on the design, procurement, and installation of the necessary equipment to upgrade the Authority's existing fire protection, controls, and systems for the safe handling and use of liquified propane gas.[3]
- Undocumented soil conditions and underground obstacles on St. Croix.[4]
- The complexity of permitting, contracting, demolishing, and disposing of structures with lead-based paint.
- Greater challenges than anticipated in coordinating the conversion of the power plants to safely burn propane while simultaneously operating power generating facilities to meet daily electricity demand.
- The reality of global sourcing of all the materials and equipment for the Project.
- Adverse weather conditions in the early phases of the Project which led to construction delays that hindered overall productivity.
- Compliance with additional regulatory requirements to assure the safety and the security of the marine aspect of the Project, including necessary redesigns to convert the anticipated anchoring program to a full-fledged mooring solution.

Contract change orders and adjustments are not new or uncommon for infrastructure projects of this type and scale. The procedure for change orders and accompanying adjustments in cost was a deliberative, transparent, highly structured, and fully documented process in which both parties and their teams participated and negotiated.

It is important to note that of the $160 million in project costs, $20 million was spent on upgrading WAPA's fuel jetty facilities and other marine infrastructure in both districts to facilitate operations that were necessary for compliance with U.S. Coast Guard regulations. Whether VIWAPA switched to LPG or not, these upgrades to our aged

[3] For example, propane gas is heavier than air and therefore must be handled carefully in enclosed of sub grade places.
[4] Despite typical soil borings to ascertain excavation conditions, it is common on a large construction project to encounter various buried obstacles that add costs.

facilities were necessary regulatory and safety requirements. In addition, $25 million of the Project cost was to finance the conversion of the General Electric (GE) turbines. Therefore, $45 million of the $160 million, which equates to 28 percent of the overall Project cost was spent to upgrade and convert WAPA-owned facilities and properties.

When all these factors are considered, the Project costs are not unreasonable Moreover, the Project will continue to provide customers with significant benefits over the next 20-30 years. VIWAPA hopes that the information it has provided will shed further light and respond to questions and concerns on what transpired during this Project.

Finally, it should be noted that the Authority intends to refinance the Vitol facilities, with the goal of using United States Department of Agriculture's (USDA) Rural Utility Service loan program, which could result in a 20 plus year loan at about a 3% interest rate. This will save our customers an additional 2.5 cents/KWHr.

SECTION 7- ALTERNATIVE FINANCING RECOMMENDATIONS

During the past few months some stakeholders have gone public, offering a variety of alternative proposals and initiatives to the current rates and the proposed rate increases. They claim these proposals would provide the Authority with the necessary resources to fund the Authority's revenue requirements inclusive of existing debt. Some of those recommended proposals, such as having the Public Finance Authority (PFA)

float bonds for the Authority and the use of Community Development Block Grant (CDBG) Funding, are not feasible without securing a funding source to repay incurred debt, and in the case of federal funds, congressional authorization to reprogramming federal funding.

However, I want to take this opportunity to assure all stakeholders that the Authority continues to explore, and is willing to explore, all recommended alternatives after our immediate rate request has been granted. In the short term, there is no other alternative.

SECTION 8 - BILLING

Since Hurricanes Irma and Maria, the Authority has struggled to resume and enhance its pre-hurricane billing processes. The Authority's Billing and Customer Services operations continue to normalize as the Authority works to bill all active customers monthly and resolve billing issues and disputes in a timely manner. Despite on-going technical difficulties, the Authority continues to rebuild the AMI meter system. As of the June 2019 billing cycle, 85% of the Electric and Water System bills are being read by the automated system while 15% are being manually read or being estimated. The Authority continues to work to fully restore and connect all AMI meters to the network and will begin to replace the Water System meters shortly. In the interim, the Authority

has hired additional temporary meter readers to reduce the amount of bills that are estimated and increase the servicing and replacement of meters.

Post Hurricanes Irma and Maria, the Authority has worked to bill all customers and to collect outstanding receivables, governmental and non-governmental. The Authority's disconnection policy is the most effective mechanism for the Authority to ensure collections. During December 2018, the Authority resumed the disconnection policy that had been suspended after Hurricanes Irma and Maria. Beginning in Fiscal Year 2018 and continuing to date, the Government of the Virgin Islands has finally paid off most of the outstanding receivables owed to the Authority and for the most part, the Government continues to remain current. Since the storms, some Non-Government customers had not paid their accounts since August 2017. That resulted in those customers accumulating very high balances that they were unable to pay, despite the Authority's efforts to resolve billing issues and establish payment plans on a case by case basis where the customer had made efforts to pay off outstanding balances and keep current with the monthly billing.

Customers that are disconnected are still expected to pay their bill in full plus the reconnection fee. The Authority continues to work with all customers to resolve billing issues and bring their accounts current. Accordingly, non-government receivables in December 2018 were $21.6 million but are currently down to $12 million as of September 2019. Currently, approximately 90% of the Authority's non-government customers are current with their bills. Also, the Authority continues to work with the Administration to

eliminate the amount of outstanding government receivables and explore opportunities to accelerate payment of the government receivables.

The Authority continues to make other improvements in the Customer Service and Customer Accounts Departments. The long-awaited reorganization of the Customer Service Department was fully implemented in February 2019. The Customer Service Department had previously been managed by two district managers. However, as of February 25, 2019, the Customer Service Department's two core divisions, Customer Accounts and Customer Service were separated and are both being managed by a territorial manager. The Territorial Customer Accounts Manager and Customer Service Manager are both long term employees. Additionally, the Meter Reading Department has been transferred to the Information Technology Department and is now managed by the Chief Information Officer.

Additionally, the Authority is working to further improve the customer service and customer accounts experiences by providing additional training and staffing, adjusting customer account and customer service office hours as necessary to accommodate customer needs, improving the phone system and working to reengineer key functions. Also, the relocation of the St. Thomas Customer Service and Customer Accounts Offices, other administrative and support services and Executive Office to a new location is being addressed.

SECTION 9- VIWAPA TRANSFORMATION PLAN

Following the hurricanes of 2017, the federal government, through the Federal Emergency Management Agency (FEMA) and the Department of Housing and Urban Development (HUD), has made funding available for restoration and recovery of the Virgin Islands including the electrical utility sector. Unlike recovery from previous disasters, the federal government has authorized funding of projects that improve infrastructure. This is being done in order to mitigate expenses incurred during future severe weather events. As a result, the Authority will be able to significantly transform itself over the next five years. The transformation will be from a utility with extreme exposure to catastrophic storm events,[5] little use of renewable energy resources, and inefficient and unreliable generation to a utility that has a hardened transmission and distribution (T&D system), significant use of renewable energy, and efficient and reliable generation.

VIWAPA's Transformation Plan has three key elements:

1. Improved Resiliency. The first key component is mitigation projects funded by Federal Emergency Management Agency ("FEMA") and Housing and Urban Development ("HUD"). HUD will be providing the 10% local match. FEMA has approved over $600 million in projects to harden our Transmission and Distribution System. This includes $400 million for underground circuits to approximately 50%

[5] According to analyses conducted by researchers at Colorado State University, the U.S. Virgin Islands are among the most vulnerable region in the United States to hurricanes. This research indicated that there is 35 percent probability that a named storm in the Caribbean Basin will come within 50 miles of the Territory in any given year.

of our customers. Composite poles will be installed for a significant portion of circuits that will remain overhead. Substation upgrades, AMI hardening and submarine cables for improved resiliency is taking place. I think it is important to note that the Authority is progressing and spending money in all of these areas – engineering for underground projects is underway, the composite pole project is proceeding throughout the territory, with Water Island having recently been completed. Additionally, the Authority recently started construction of a concrete reinforced substation to replace our East End substation in St. Thomas.

2. Greater Renewable Penetration. The second main component of our Transformation Plan involves greater use of renewable energy. Currently, the Authority buys solar power under a Power Purchase Agreement ("PPA") with BMR energy in St. Croix. This solar farm produces about 600,000 KWhr of electricity each month. This represents only about 1 ½ percent of the electricity produced by the Authority each month. Using HUD grants, the Authority will significantly increase the use of a utility scale, WAPA owned solar and wind generation. Batteries will be included in these projects to lessen the impact that swing in renewables can have on WAPA's grid. The Authority is currently in the application process to obtain funding for the installation of 28 MWs of utility owned solar, along with a large battery energy storage system, for the island of St Croix. Additional projects are in the pipeline and are at varying stages of development. Through the reduction in fuel usage and mitigation of costly power purchase agreements, the

Authority will be in a position to make steady progress toward providing its services at rates that are more stable and affordable.

3. Improved Generation. The third component of our transformation plan is to complete the upgrades of our power plants. The Authority's 2016 Integrated Resource Plan ("IRP") called for completely upgrading both our power plants with smaller, more efficient, more reliable and renewable compatible generators that will use clean burning propane as the primary fuel. Recently, the Authority commissioned 21 MW of new owned generation in St. Thomas and 20 MW of new leased generation in St. Croix. These generators are of the type that were called for in our 2016 IRP and that means that today, over 50% of WAPA's electrical generation has been upgraded as promised – the "Future is Here". WAPA will complete the upgrade of both of its plants using HUD funds and just recently WAPA released an RFP for up to 40 MW of new generation for St. Thomas that will be funded by HUD. It is expected that these new generators can be in place by the end of next year and they will allow us to reduce rate by an estimated 5 cents/KWhr.

The Authority recognizes the need to pull in additional resources to help manage and monitor the timely and accurate execution of this Transformation Plan. As such, the Authority will rely on external project and construction management experts and has already begun preparing Request For Proposals ("RFP") for Project Management

Services contracts. From a portfolio management perspective, the Authority is receiving assistance from the New York Power Authority to develop a five-year execution plan which identifies all capital projects, cost estimates, execution timelines, and funding sources.

Additionally, in order to successfully implement such a large set of complex and interrelated projects, the Authority recognizes the importance of a reliable design which optimizes the synergistic benefits of all of the system components. Through the Department of Energy, the Authority has access to the National Renewable Energy Laboratory ("NREL"). NREL, utilizing sophisticated state of the art technology, has the capability of modeling these proposed projects in order to validate their effectiveness and viability prior to implementation. What this means is that before a shovel enters the ground, all stakeholders can be assured that the projects will function as anticipated and will result in realization of the intended benefits. Additionally, assistance from APPA partner, the New York Power Authority, and other consultation and engineering service experts will help to ensure that designs are well thought out and properly vetted prior to implementation.

The Authority is currently developing a revised IRP, in conjunction with the above-named technical resources, and it is expected to be available in the 4th quarter of this year. This IRP will provide complete definition of the renewable and generation plan for the territory. We would welcome the opportunity to present this revised IRP plan to the Legislature later this year.

This concludes my testimony for today. My staff and I are available to address any questions. Thank you.

END OF PRESENTATION